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cate, while others remain to be discovered. The luxuriant vegetation of the tropics throughout the entire year affords so much concealment that color may there be safely developed to a much greater extent than in climates where the trees are bare in winter, during which season the struggle for existence is most severe, and even the slightest disadvantage may prove fatal. Equally important, probably, has been the permanence of favorable conditions in the tropics, allowing certain groups to continue dominant for long periods, and thus to carry out in one unbroken line whatever development of plumage or color may once have acquired an ascendancy. Changes of climatal conditions, and preëminently the Glacial epoch, probably led to the extinction of a host of highly developed and finely colored insects and birds in temperate zones, just as we know that it led to the extinction of the larger and more powerful mammalia which formerly characterized the temperate zone in both hemispheres. This view is supported by the fact that it is among those groups only which are now exclusively tropical that all the more extraordinary developments of ornament and color are found. The local causes of color will also have acted best in regions where the climatal conditions remained constant, and where migration was unnecessary; while whatever direct effect may be produced by light or heat will necessarily have acted more powerfully within the tropics. And, lastly, all these causes have been in action over an actually greater area in tropical than in temperate zones, while estimated potentially, in proportion to its life-sustaining power, the lands which enjoy a practically tropical climate (extending as they do considerably beyond the geographical tropics) are very much larger than the temperate regions of the earth. Combining the effects of all these various causes we are quite able to understand the superiority of the tropical parts of the globe, not only in the abundance and variety of their forms of life, but also as regards the ornamental appendages and vivid coloration which these forms present.

THE SEVEN TOWNS OF MOQUI.

BY E. A. BARBER.

AS early as the year 1540, Don Pedro de Tobar, one of the first Spanish adventurers, was dispatched by Coronado to the "province of Tusayan" (the modern Moqui, situated in Arizona, in longitude 110° to 111° west, and latitude 35° to 36°

north). The inhabitants were filled with great fear when they heard that a race of fierce men who rode horses (never having seen such animals before) had captured Cibola (ancient Zuni). "They, however, made some show of resistance to the invaders in their approach to their towns, but the Spaniards charging upon them with vigor, many were killed, when the remainder fled to the houses and sued for peace, offering as an inducement presents of cotton stuffs, tanned hides, flour, pine nuts, maize, native fowls, and some turquoises."¹

Resulting from this visit of the conquerors, the Moquis or *Moquinos* were afterwards converted by the zeal of the Franciscans, but in the year 1680 they apostatized, and after massacring their instructors revolted, together with other Indians of the territory then included in New Mexico. At that time they drove out the Spaniards from their towns, and no attempt, since that event, has been made to reduce them again to submission.

In the latter part of the last century, about the year 1799, Don Jose Cortez wrote of them: "The Moquinos are the most industrious of the many Indian nations that inhabit and have been discovered in that portion of America. They till the earth with great care, and apply to all their fields the manures proper for each crop. . . . They are attentive to their kitchen gardens, and have all the varieties of fruit-bearing trees it has been in their power to procure. The peach-tree yields abundantly. The coarse clothing worn by them they make in their looms. . . . The town is governed by a *cacique*, and for the defense of it the inhabitants make common cause. The people are of a lighter complexion than other Indians. . . . The women dress in a woven tunic without sleeves, and in a black, white, or colored shawl, formed like a mantilla. The tunic is confined by a sash, that is usually of many tints. . . . The aged women wear the hair divided into two braids, and the young in a knot over each ear."

Although the foregoing descriptions were written more than three quarters of a century ago, they apply to the tribe, in every detail, at the present time. During our visit to these strange and isolated people in the summer of 1875, I was struck with the accuracy of some of the early Spanish writers in their quaint accounts which I had previously read. The names of the seven towns are subject to shades of variation in pronunciation at different times, because the tribe possesses no written language by which they might be permanently recorded; yet it is a curious

¹ See Essay by Col. J. H. Simpson, Smithsonian Report, 1869. ¹

fact that we can recognize the majority of these almost unpronounceable names in the most ancient Spanish chronicles. For the purpose of comparison I append the following lists as given by different authors at various periods : —

According to Don Jose Cortez, an officer of the Spanish Royal Engineers, in his report sent to the king of Spain in the year 1799 : —

O-rai'-be.
Xou-go-pa'-vi.
Gui-pau'-a-vi.
Mos-zas'-na-vi.
Gual'-pi.

Tau'-cos or Tan'-os.

According to Maj. J. W. Powell, in his exploration of the "ancient province of Tusayan," in the year 1869 : ² —

O-rai'-bi.
Shong-a-pa'-vi.
Shi-pau'-i-lu-vi.
Mi-shong'-i-ni-vi.
Wol'-pi.
Si-choam'-a-vi.
Te'-wa.

As given in the third volume of Pacific R. R. Reports by Lieut. A. W. Whipple, of the Corps of United States Topographical Engineers, in the year 1854 : ¹ —

O-rai'-be.
Shu-muth'-pa
Ah-le'-lah.
Mu-shai'-i-na.
Gual'-pi.
Shi-win'-na.
Te'-qua.

As collected by the photographic division of the United States Geological Survey, which visited Moqui in the year 1875 : ³ —

O-rai'-bi.
Shung-a-pa'-vi.
Shi-pau'-la-vi.
Mu-sha'-ni.
Mo'-qui or Gual'-pi.
Si-chum'-a-vi.
Te'-qua (pronounced *Tay'-wah*).

Mr. Wm. H. Jackson, the photographer of the United States Geological Survey, returned to the Moqui pueblos during the spring of the present year (1877), and while there, an actual census was taken with the following results : —

| | Men. | Women. | Children. | Total. |
|--------------------------------|------|--------|-----------|--------|
| O-ray'-bi | 160 | 145 | 195 | 500 |
| She-mo-pa'-ve | 61 | 56 | 72 | 189 |
| She-pau'-la-ve | 33 | 29 | 46 | 108 |
| Moo-song'-na-ve | 69 | 67 | 103 | 239 |
| Gual'-pi or O-pe'-ki | 90 | 80 | 164 | 334 |
| Se-chum'-e-way | 35 | 31 | 36 | 102 |
| Te'-wa | 44 | 32 | 56 | 132 |
| Total, | 492 | 440 | 672 | 1604 |

On an examination of these figures we shall perceive that the percentage of males is larger than that of females, and this fact may be accounted for by the unadventurous and pacific character of the men. They are therefore less liable to accident than the males of other tribes, and consequently the two sexes of this tribe retain to a greater extent their normal ratio. Polygamy, therefore, is rare among them, and polyandry is unknown.

¹ Mr. Leroux, about the year 1853, estimated the Moquis at 6720 population.

² About the year 1870 Mr. Beadle gave the population of the seven towns at 3000.

³ The tribe in 1875 numbered between 1500 and 2000 souls.

If we allow, out of the nine hundred and thirty-two adults, the large proportion two hundred and sixty to be unmarried, we will have an average result of only two children in every family. The mortality of the race being much greater than the increase in population (being about equally divided between the two sexes) the Moquis are rapidly passing away. In the last quarter of a century there has been a decrease of five thousand in their entire number. After the lapse of the next score or so of years the race will most probably have become extinct.

HUNTING AMBLYCHILA.¹

BY PROFESSOR F. H. SNOW.

IN considering the unintelligibility of the title of this paper to one who is not a professional entomologist, I am reminded of a brief dialogue which occurred between Mr. Foster, a member of my last summer's collecting party, and a cow-boy of the plains, who passed by one evening while Mr. Foster was looking for specimens. After watching him for some moments with great curiosity, the cow-boy asked: "What you doing?" Mr. Foster replied: "Hunting Amblychila." The cow-boy, bewildered, inquired again: "Ambly Cheila,—who's she?" "Who she is" it will be the object of this paper in some measure to explain.

In 1823 the famous entomologist Thomas Say discovered a single dead specimen of this insect "near the base of the Rocky Mountains." Twenty-nine years later a second specimen, also dead, was found by one of the United States surveying expeditions. The remarkable structure and extreme rarity of this beetle made it "*facile princeps*" among American insects, and its possession was eagerly desired and earnestly sought by our foremost entomologists. But many difficulties lay in the pathway of those who would gain the coveted prize. The regions in which the two specimens had been captured were practically inaccessible to the entomologist. No railroad had then entered the vast country west of the Missouri River, and hostile bands of Indians were at all times in readiness to massacre the reckless adventurers who should dare to traverse their hunting-grounds without a powerful military escort. A national expedition for

¹ Read at the annual meeting of the Kansas Academy of Science, October 12, 1877, by Professor F. H. Snow, of the Kansas University.